APPENDIX

Application Number 10/724,316

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CALCULATION OF ROTOR PERIPHERAL SPEEDS

Applicants' Example 3

As described in Example 3, applicants constructed a machine with a collector rotor having a diameter of 15" turning at 65 revolutions per minute.

The peripheral velocity is calculated as

65 revolutions/minute x 15 x π inches/revolution x 1 / 12 inches /foot x 1/5280 feet / mile x 60 minutes/hour= 2.9 miles per hour, or

2.9 miles/hour x 5280 feet/mile x 1 / 3600 seconds / hour = 4.25 feet/second.

Similarly for Example 4, the rotor turned at 276 rpm with a peripheral rotor velocity of 12.3 mph (18.0 feet/sec.) For Example 8, the rotor turned at 138 rpm with a peripheral rotor velocity of 6.16 mph (9.0 feet/sec).

Kobayashi Apparatus

The Kobayashi drawing in Figure 2 can be used to calculate the peripheral velocity of that machine. Using the enlarged view of Figure 2 which follows on the next page, and a millimeter scale to measure the wheel, sprocket, and brush diameters, the peripheral velocity of the brush (PVbrush) can be calculated as a ratio of the ground speed of the machine (Vmachine):

PVbrush = 9.6/24.5 x 36.5/7.5 x Vmachine = 1.91 Vmachine.

Typically, such a machine can be operated safely and effectively at about one mile per hour. For a machine forward speed of 1.0 mile /hour, the PVbrush would be:

PVbrush = 1.91 x 1.0 = 1.91 mile / hour (2.8 feet/sec).